

DYNAMIC CHANGES IN SERUM TRANSAMINASES IN PATIENTS WITH SYPHILIS*

BY

G. SPIROV, K. PRODANOV, A. BONEV, AND S. STEFANOV

From the Dermato-venereological Research Institute, The Central Biochemical Laboratory at the Higher Medical Institute, and the City Dermo-venereological Dispensary, Sofia, Bulgaria

Recently assays of glycolytic enzymes and transaminases have significantly expanded the diagnostic possibilities of internal medicine. Thus one may confirm myocardial infarction by serum transaminase activity within the first few hours in at least 95 per cent. of all cases. The testing of these enzymes has also improved the diagnosis of virus hepatitis and other liver diseases, and their undoubted prognostic and diagnostic value in dermatology has also been investigated. The studies of many authors have shown that transaminase tests are of limited clinical value in all dermatoses except dermatomyositis (de Moragas, Perry, and Fleisher, 1957; Wüst, Langrehr, and Horn, 1958; Wüst, 1960; Vickers, 1961; Tickner, Mier, and McCabe, 1961; Korting, Weber, and Werle, 1962; Agostini and Zanca, 1962; Prodanov and Spirov, 1965).

Our own studies showed an increase in serum transaminases in fresh secondary syphilis, and we therefore undertook the follow-up of the aspartate (SGOT) and alanine (SGPT) transaminases in a larger series of 55 cases of syphilis before and after treatment.

Material and Methods

The enzymes were assayed according to the technique of Reitman and Frankel (1957) (normal values: for SGOT 5 to 17 I.U. and for SGPT 5 to 13 I.U.). Fresh unhaemolysed sera were used.

In most patients additional studies of the urine, serum bilirubin, and protein patterns, and liver flocculation tests were performed. A detailed clinical history was taken and a physical examination carried out.

All 55 were new cases and received their first course of treatment as in-patients at the Dermato-venereological Research Institute or at the City Dermato-venereological Dispensary in Sofia. Their clinical particulars, sex, and age are presented in Table I.

TABLE I
CLINICAL PARTICULARS OF 55 CASES

Diagnosis of Syphilis	Number of Cases	Sex		Age (yrs)
		Male	Female	
Primary sero-negative ..	13	12	1	21-41
Primary sero-positive ..	14	11	3	16-37
Recent secondary ..	16	12	4	18-49
Relapsing secondary ..	4	3	1	22-46
Latent	8	4	4	17-58
Total	55	42	13	16-58

The first courses of treatment consisted of penicillin (15 to 22 million units) followed immediately by bismuth (1.0 g. per course) administered separately.

In all patients the transaminase activity was checked before treatment and on each seventh day thereafter for 5 or 6 weeks or more. Rises above 19 I.U. for SGOT and above 15 I.U. for SGPT were taken into account, those less than 2 I.U. above the normal being regarded as insignificant.

Results

The SGOT was raised before treatment in 27 (49.1 per cent.) and during the first and second weeks of treatment in another 23 (41.8 per cent.), making a total of 90.9 per cent. Normal levels were found in two patients with latent syphilis, one with recent secondary syphilis, one with relapsing secondary syphilis, and one with primary sero-positive syphilis.

The SGPT was raised before treatment in ten (18.2 per cent.) and during the first 2 weeks of treatment in another fourteen (25.5 per cent.). Thus the ratio of raised SGOT to raised SGPT was 2.1:1 before treatment. The comparatively small number of patients does not permit any firm conclusions to be drawn regarding the levels in various types of disease, but the results are presented in Table II (overleaf).

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TABLE II
TRANSAMINASE VALUES IN 55 CASES OF SYPHILIS

Diagnosis of Syphilis	No. of Cases	Raised Transaminase Level														
		Before Therapy					During the First Weeks of Therapy					Before and After Therapy				
		SGOT		SGPT		GOT:GPT	SGOT		SGPT		GOT:GPT	SGOT		SGPT		GOT:GPT
		No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.	
Primary sero-negative ..	13	6	46.2	2	15.4	3:1	7	53.8	2	15.4	3.5:1	13	100	4	30.8	4.2:1
Primary sero-positive ..	14	8	57.1	3	21.4	2.7:1	5	35.7	4	28.6	1.2:1	13	92.9	7	50.0	1.9:1
Secondary recent	16	8	50.0	2	12.5	4:1	7	43.7	5	31.2	1:1	15	93.7	7	43.7	2.1:1
Secondary relapsing	4	1	25.0	1	25.0	1:1	2	50.0	2	50.0	1:1	3	75.0	3	75.0	1:1
Latent ..	8	4	50.0	2	25.0	3:1	2	25.0	1	12.5	2:1	6	75.0	3	27.2	2.5:1
Total ..	55	27	49.1	10	18.2	2.9:1	23	41.8	14	25.5	1.6:1	50	90.9	24	43.6	2.1:1

In most instances the values rose by less than twice the normal. The average raised values were 34.47 I.U. SGOT and 23.56 I.U. SGPT. The highest SGOT value (79.64) was found before treatment in a patient with recent secondary syphilis and the highest SGPT in (51.65) a patient with relapsing secondary syphilis one week after being treated.

In 24 (48 per cent.) of the fifty cases with raised SGOT the enzyme activity became normal within one week, in seventeen (24 per cent.) within 2 weeks, and in five (10 per cent.) within 3 weeks; it persisted during the whole period of study in only three cases (6 per cent.). The SGPT activity tended to become normal even more rapidly; out of 26 cases the SGPT became normal in 16 (66.6 per cent.) during the first week, in six (25 per cent.) during the second week, and in one (4.2 per cent.) during the

third week of treatment; in only one case (4.2 per cent.) was the elevation constant.

In sixteen cases the institution of bismuth therapy after the SGOT and SGPT values became normal was accompanied by new rises; these subsided in 10 to 15 days in all but three cases in which they persisted until shortly after the therapy ended.

The activities of both enzymes are shown in the Figure.

Five patients with raised serum transaminases had positive liver flocculation tests.

Discussion

So far no other reports on raised serum transaminases in syphilis have been published, so that our findings cannot be compared to those of other workers. It is well known that transaminases are

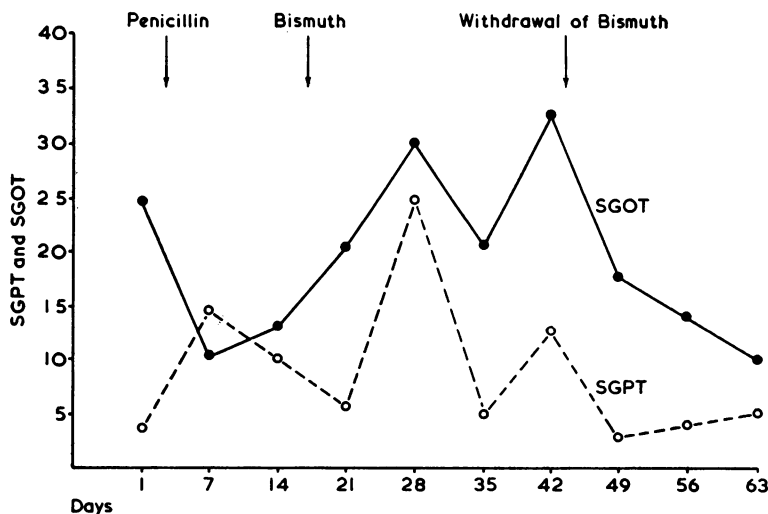


FIGURE.—Activity of SGOT and SGPT during 2 months' treatment (mean of 16 cases).

intracellular enzymes and that the reactions catalysed by them are of vital importance for cellular metabolism. They are found in a number of tissues, but are most abundant in the myocardium, skeletal muscles, liver, kidneys, brain, and intestinal mucosa. Their slight elevation in a large proportion of various forms of syphilis may be related to the involvement of the liver parenchyma by syphilitic infection. This may be especially true for the patients in whom the transaminase levels are raised *before* the therapy was begun. With the other group in which transaminase activities increased *after* specific treatment was started, the liver lesions could have resulted from the disintegration of spirochaetes in the liver parenchyma resulting in a mild inflammatory reaction.

These interpretations are still speculative and their proof should be based on a detailed follow-up of a larger series of patients and on laboratory studies. The repeated rise of the transaminase levels in a certain number of patients after starting bismuth therapy is most probably due to the effect of the drug upon the parenchymatous organs which is usually slight and reversible. Only a few patients receiving bismuth showed persistent rises, and these regressed promptly at the end of therapy.

Summary

The enzyme assays of 55 patients with various forms of syphilis showed a rise in aspartate transaminase (SGOT) in 90.9 per cent. and of alanine transaminase (SGPT) in only 43.6 per cent. At its maximum the enzyme level was double the normal value. With antisyphilitic treatment these changes

subsided in a few weeks. Bismuth therapy may cause a new rise in the serum transaminases, possibly as a result of a drug-induced lesion of the liver parenchyma.

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Les changements dynamiques des transaminases du sérum chez les malades atteints de la syphilis

RÉSUMÉ

Le titrage des enzymes chez 55 patients aux différentes phases de la syphilis a montré une augmentation de la transaminase aspartate (SGOT) dans 90,9 pour cent des cas et de la transaminase d'alanine (SGPT) dans seulement 43,6 pour cent des cas. A son maximum le niveau de l'enzyme était le double de la normale. Avec le traitement syphilitique ces changements ont diminué après quelques semaines. La thérapeutique au bismuth peut causer une nouvelle hausse dans les transaminases de sérum, possiblement comme résultat d'une lésion du parenchyme du foie causée par une drogue.